



SEQUENCE LISTING

<110> KUMAGAI, Monto H.
DELLA-CIOPPA, Guy R.
ERWIN, Robert L.
McGEE, David R.

<120> METHOD OF DETERMINING THE PRESENCE OF A
TRAIT IN A PLANT BY TRANSFECTING A NUCLEIC ACID SEQUENCE OF
A NON-PLANT DONOR INTO A HOST PLANT IN A POSITIVE
ORIENTATION

<130> 008010137US07

<140> 09/359,300
<141> 1999-07-21

<160> 60

<170> FastSEQ for Windows Version 3.0

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<213> Tomato mosaic virus

<400> 1

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26

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<400> 2

cggggtacct gggccccaac cgggggttcc ggggg

35

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41

<210> 4
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<400> 4

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35

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<213> Tomato mosaic virus

<400> 5

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24

<210> 6

<211> 24

<212> DNA

<213> Tomato mosaic virus

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agtcgactctt ttttttttgcat

24

<210> 7

<211> 30

<212> DNA

<213> Tomato mosaic virus

<400> 7

tgctcgagtg ttttttttcag tttttctgtca

30

<210> 8

<211> 30

<212> DNA

<213> Tomato mosaic virus

<400> 8

aactcgagcg ctttggatttc tccgaagctt

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<210> 9

<211> 114

<212> DNA

<213> Tomato mosaic virus

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<221> CES

<222> (28) ... (115)

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Met Ser Val Ala Leu Leu Trp Val Val

1

5

54

tct cct tgc gtc tca aat ggg aca agt ttc atg gaa tca gtc cgg
Ser Pro Cys Asp Val Ser Asn Gly Thr Ser Phe Met Glu Ser Val Arg
10 15 20 25

102

gag gga aac cgt
Glu Gly Asn Arg

114

<210> 10

<211> 29

<212> PPT

<213> Tomato mosaic virus

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Gly Thr Ser Phe Met Glu Ser Val Arg Glu Gly Asn Arg
20 25

<210> 11
<211> 39
<212> DNA
<213> Nicotiana benthamiana

<400> 11
gcctcgagtg cagcatggaa acccttctaa agctttcc 39

<210> 12
<211> 36
<212> DNA
<213> Nicotiana benthamiana

<400> 12
tcccttaggtc aaaggctctc tattgctaga ttgcc 36

<210> 13
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<213> Tobacco mosaic virus

<220>
<221> CDS
<222> (25)...(111)

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Met Glu Thr Leu Leu Lys Pro Phe Pro
1 5

tct cct tta ctt tcc att cct act cct aac atg tat agt ttc aaa cac 99
Ser Pro Leu Leu Ser Ile Pro Thr Pro Asn Met Tyr Ser Phe Lys His
10 15 20 25

aac ttc act ttt
Asn Phe Thr Phe 111

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<211> 29
<212> PRT
<213> Tobacco mosaic virus

<400> 14
Met Glu Thr Leu Leu Lys Pro Phe Pro Ser Pro Leu Leu Ser Ile Pro
1 5 10 15
Thr Pro Asn Met Tyr Ser Phe Lys His Asn Phe Thr Phe
20 25

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<211> 44		
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<213> Erwinia herbicola		
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ccaaagcttctt cggagtgcagg atgcagcaac cgcccgctgct tgac		44
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<211> 43		
<212> DNA		
<213> Erwinia herbicola		
<400> 16		
aagatctctt gagstaaaacg ggacgctgccc aaagaccggc cgc		43
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<213> Tobacco mild green mosaic virus		
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tgtgaaactt gaaaaaggtttc cgg		23
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<211> 36		
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<213> Tobacco mild green mosaic virus		
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<212> DNA		
<213> Ribgrass mosaic virus		
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tactcgaggt tcataaagacc gcggtagggcg g		31
<210> 20		
<211> 36		
<212> DNA		
<213> Flax mosaic virus		
<400> 20		
cggggtaacct gggccgcctac cgggggttttta gggagg		36
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<211> 107		
<212> DNA		
<213> N. tabacum		
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<222> 21 ... (10 ⁷)		
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gttttaaata cgctcgagcc atg gct tcc tca gtt ctt tcc tct gca gca gtt
          Met Ala Ser Ser Val Leu Ser Ser Ala Ala Val
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gcc act cgc agc aat gtt gct caa gct aac atg gtt gca cct ttc act      101
Ala Thr Arg Ser Asn Val Ala Gln Ala Asn Met Val Ala Pro Phe Thr
15          20          25

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ggc ctt
Gly Leu

<210> 22
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<212> PRT
<213> *N. tabacum*

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   1           5           10          15
Val Ala Gln Ala Asn Met Val Ala Pro Phe Thr Gly Leu
   20          25

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 <212> DNA
 <213> rape mosaic virus

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<210> 25
 <211> 497
 <212> DNA
 <213> rape mosaic virus

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 aacattgcag gctgcgcag ggcgaacacag cctggtaat gatttagct cacgacgtgt 180
 ttatgacaat gctgtcgagg agctaaatgc acgctcgaga cggccctaagg ttcattactc 240
 caaatcagtg tctacggaac atgacgctgt tagttcaaa cggttatccg gagtttgaga 300
 ttccctttac tcatacccaa catgcgtac actcccttgc gggtggccta aggactcttg 360
 agtttagagta tctcatgtatg caagttccgt tgggtctct gacgtacgac atcgggtgta 420
 actttgcagg gcacccccc aaaggacgcg actacgttca ctgctgtatg ccaaacttgg 480
 atgtacgtga tatagt 497

<210> 27
 <211> 59
 <212> DNA
 <213> rape mosaic virus

<400> 27
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<210> 28
 <211> 37
 <212> DNA
 <213> rape mosaic virus

<400> 28
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<210> 29
 <211> 497
 <212> DNA
 <213> rape mosaic virus

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 aacattgcag gctgcgcag ggcgaacacag cctggtaat gatttagct cacgacgtgt 180

ttatgacaat	gtgtcgagg	agctaaatgc	acgctcgaga	cgcctaagg	ttcattactc	240
caaatacg	gttacggaa	agacgctgtt	agcttcaa	gcttatccgg	agtttgagat	300
ttcccttact	ataacccaa	catggcgatc	actcccttgc	gggtggccca	aggactcttg	360
agtttagagta	tctatgatg	caagttccgt	tgggttctt	gacgtacgac	atcggtggta	420
actttggag	ggaccccttc	aaaggacg	acta	gtgtatg	ccaaacttgg	480
atgtacgtga	tata	gt				497
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ttggactctg	ttggctcatg	acgtat				25
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caagttgc	caaacgaacg	tctcac				26
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<211> 42						
<212> DNA						
<213> <i>Pisum sativum</i>						
<400> 34						
caactcgag	atggctattt	cccgaa	aaat	ttgtat	ttat	cg
42						
<210> 35						
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<213> <i>Pisum sativum</i>						
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<210> 36						
<211> 14						

<212> DNA
 <213> Arabidopsis thaliana
 <400> 36
 tcgagcggcc gcat 14
 <210> 37
 <211> 42
 <212> DNA
 <213> Trichosanthes kirilowii
 <400> 37
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 <210> 38
 <211> 36
 <212> DNA
 <213> Trichosanthes kirilowii
 <400> 38
 tcctcttaggtt aaatagcata acttccacat caaagc 36
 <210> 39
 <211> 109
 <212> DNA
 <213> Trichosanthes kirilowii
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 Met Ile Arg Phe Leu Val Leu Ser Leu Leu Ile
 1 5 10
 ctc acc ctc ttc cta aca act cct gct gtg gag ggc gat gtt agc ttc 100
 Leu Thr Leu Phe Leu Thr Thr Pro Ala Val Glu Gly Asp Val Ser Phe
 15 20 25
 sgt tta tca 109
 Arg Leu Ser
 30
 <210> 40
 <211> 30
 <212> PRT
 <213> Trichosanthes kirilowii
 <400> 40
 Met Ile Arg Phe Leu Val Leu Ser Leu Leu Ile Leu Thr Leu Phe Leu 15
 1 5 10 15
 Thr Thr Pro Ala Val Glu Gly Asp Val Ser Phe Arg Leu Ser
 20 25 30
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<211> 19

<212> PRT

<213> P. ycelii

<400> 41

Ser Tyr Val Pro Ser Ala Glu Gln Ile Leu Glu Phe Val Lys Gln Ile
1 5 10 15

Ser Ser Gln

<210> 42

<211> 839

<212> DNA

<213> Nicotiana benthamiana

<220>

<221> CDS

<222> (15) ... (677)

<400> 42

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agc ttc aag ctc gtt atc gtt ggc gat gga ggc aca ggg aag acc aca 98
Ser Phe Lys Leu Val Ile Val Gly Asp Gly Gly Thr Lys Thr Thr
15 20 25

ttt gta aag aga cat ctt act gga gag ttt gag aag aag tat gaa ccc 146
Phe Val Lys Arg His Leu Thr Gly Glu Phe Glu Lys Lys Tyr Glu Pro
30 35 40

act at: ggt gtt gag gtt cat cct ctt gat ttc ttc act aac tgt ggc 194
Thr Ile Gly Val Glu Val His Pro Leu Asp Phe Phe Thr Asn Cys Gly
45 50 55 60

aag atc cgt ttc tac tgt tgg gat act gct ggc caa gag aaa ttt ggt 242
Lys Ile Arg Phe Tyr Cys Trp Asp Thr Ala Gly Gln Glu Lys Phe Gly
65 70 75

ggc ctt agg gat ggt tac tac atc cat gga caa tgt gct atc atc atg 290
Gly Leu Arg Asp Gly Tyr Tyr Ile His Gly Gln Cys Ala Ile Ile Met
80 85 90

ttt gat gtc aca gca cga ctg aca tac aag aat gtt cca aca tgg cca 338
Phe Asp Val Thr Ala Arg Leu Thr Tyr Lys Asn Val Pro Thr Trp His
95 100 105

cgt gat ctt tgc agg gtt tgt gaa aac atc cca att gtt ctt tgt ggg 386
Arg Asp Leu Cys Arg Val Cys Glu Asn Ile Pro Ile Val Leu Cys Gly
110 115 120

aat aaa gtt gat gtg aag aac agg caa gtc aag gcc aag cag gta aca 434
Asn Lys Val Asp Val Lys Asn Arg Gln Val Lys Ala Lys Gln Val Thr
125 130 135 140

ttc cac agg aag aac ctc cag tat tac gag ata tct gcc aag aca 482

Phe His Arg Lys Lys Asn Leu Gln Tyr Tyr Glu Ile Ser Ala Lys Ser
 145 150 155
 aac tac aac ttc gag aag cca ttc ttg tac ctt gct aga aag ctc gcc 530
 Asn Tyr Asn Phe Glu Lys Pro Phe Leu Tyr Leu Ala Arg Lys Leu Ala
 160 165 170
 ggg gag gct aat ctt ccc ttt gtg gaa tca cct gcc ctt gct ccc ccc 578
 Gly Asp Ala Asn Leu His Phe Val Glu Ser Pro Ala Leu Ala Pro Pro
 175 180 185
 gaa gtt cca atc gac ttg gct gct cag cag cag cat gag gcg gag ctt 626
 Glu Val Gln Ile Asp Leu Ala Ala Gln Gln His Glu Ala Glu Leu
 190 195 200
 gca gca gca gca agt cag cca ctt cct gat gac gat gat gac acc ttc 674
 Ala Ala Ala Ala Ser Gln Pro Leu Pro Asp Asp Asp Asp Asp Thr Phe
 205 210 215 220
 gag tagagaaaaga gagatgtat ctgtcaactga ttaccggta gggcttgtct 727
 Glu

 gaactttttt ttgttcatgg tggatttttt atgtgtcgtg acctttgaaat gaatcgatga 787
 cattagtaat tttcattttt aagttttaa ctgtcgatgaaat gaaagtgaaa ac 839

 <210> 43
 <211> 221
 <212> PRT
 <213> Nicotiana benthamiana

 <400> 43
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 20 25 30
 His Leu Thr Gly Glu Phe Glu Lys Lys Tyr Glu Pro Thr Ile Gly Val
 35 40 45
 Glu Val His Pro Leu Asp Phe Phe Thr Asn Cys Gly Lys Ile Arg Phe
 50 55 60
 Tyr Cys Trp Asp Thr Ala Gly Gln Glu Lys Phe Gly Gly Leu Arg Asp
 65 70 75 80
 Gly Tyr Tyr Ile His Gly Gln Cys Ala Ile Ile Met Phe Asp Val Thr
 85 90 95
 Ala Arg Leu Thr Tyr Lys Asn Val Pro Thr Trp His Arg Asp Leu Cys
 100 105 110
 Arg Val Cys Glu Asn Ile Pro Ile Val Leu Cys Gly Asn Lys Val Asp
 115 120 125
 Val Lys Asn Arg Gln Val Lys Ala Lys Gln Val Thr Phe His Arg Lys
 130 135 140
 Lys Asn Leu Gln Tyr Tyr Glu Ile Ser Ala Lys Ser Asn Tyr Asn Phe
 145 150 155 160
 Glu Lys Pro Phe Leu Tyr Leu Ala Arg Lys Leu Ala Gly Asp Ala Asn
 165 170 175
 Leu His Phe Val Glu Ser Pro Ala Leu Ala Pro Pro Glu Val Gln Ile
 180 185 190
 Asp Leu Ala Ala Gln Gln His Glu Ala Glu Leu Ala Ala Ala

195	200	205
Ser Gln Pro Leu Pro Asp Asp Asp Asp Asp Thr Phe Glu		
210	215	220

«210» 44
 «211» 738
 «212» DNA
 «213» Nicotiana benthamiana

«400» 44

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gagagtttga	gaagaagtat	gaacccacta	ttgggtgtga	ggttcatct	cttgatttt	180
tcaactaactg	tggcaagatc	cgtttctact	gttggatact	gttggccaa	agaaatttgg	240
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atcttcaat	tgtggaaatca	cttgccttgc	ctcccccgg	atgttcaata	gacttgggt	600
ctcagcagca	gcatgaggcg	gagttgcag	cagcagcaag	tcagccattt	cctgatgacg	660
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tttgtctgaa	tttttttt					738

«210» 45
 «211» 679
 «212» DNA
 «213» Arabidopsis thaliana

«400» 45

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gagagtttga	gaagaagtat	gaacccacta	ttgggtgtga	ggttcatct	cttgatttt	180
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tgggttttag	ggatggttca	tcatccatg	gacaaatgtgc	tatcatcatg	tttgcgtat	300
caggacgact	gacatacagg	aatgttccaa	catggcaccgt	tgattttgc	agggttttgg	360
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atcttcaat	tgtggaaatca	cttgccttgc	ctcccccgg	atgttcaata	gacttgggt	540
ctcagcagca	gcatgaggcg	gagttgcag	cagcagcaag	tcagccattt	cctgatgacg	600
atgatgacac	tttgcgtat	agaaagagag	atgtgatctg	tcactgat	cccggttaggg	660
tttgtctgaa	tttttttt					679

«210» 46
 «211» 667
 «212» DNA
 «213» N. tabacum

«400» 46

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gatggaggca	caggaaagac	cacatttgt	aagagacatc	ttaatggaga	gtttgagaag	120
aaatgttgcac	ccatattttgg	tgttggatgt	catcccttttgc	atccatgttgc	taatgttgg	180
aaatgttgcac	tatctgttg	ggataactgt	ggccaaagaga	attttgggg	tctttagggat	240
ggttactaca	tccatggaca	atgtgtatc	atcatgtttgc	atgttgcgt	atgttgcgt	300
tacaagaatgt	ttccaaatgt	gtatgtgtat	ttttgttgg	ttttgttgg	ttttgttgg	360
gttcttttgt	ggaataaaatgt	tgtgtgtat	aaatggcaag	tcaaggccaa	gtatgtgtat	420
ttccaaatgt	agaagaacatc	ccatgttgc	gatgtatctg	ccatgttgc	ccatgttgc	480

gagaaggccat	tcttgtacct	tgctagaaag	ctcgccgggg	acgctaact	tcaactttgt	540
gaatccatcg	cccttgc	cccggaaagt	caaatcgact	tgggtgctca	gcagcagcat	600
gaggcggagc	ttgcagcagc	agcaagtcag	ccacttctg	atgacgatga	tgacacat	660
gagtaga						667

<210> 47
 <211> 667
 <212> DNA
 <213> N. tabacum

<400> 47						
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aaatatgaa	ccactattgg	tgtggaggt	catccattag	atttttca	aaattgtggg	180
aaaatttgt	tttattgt	ggataactgt	ggacaagaga	agttttggagg	tcttcggat	240
ggttactaca	ttcatgggc	atgcgcatt	atcatgttt	atgtttacag	ccgtctgacc	300
tacaagaat	ttctacgt	gcacgcagat	ctctgcaggg	tttgtgaaa	catccccatt	360
gttctttgt	gaaacaaaat	tgtgtcaag	aacaggcagg	ttaaggcaaa	gcaagttacc	420
ttccacagga	agaaaaattt	gcaataactat	gagatctcag	caaagagtaa	ctacaactt	480
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gaatcacctg	caattgtcc	ccctgaagta	caaattgatt	tagtgcaca	gcaactgcat	600
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gaataga						667

<210> 48
 <211> 137
 <212> PFT
 <213> Tobacco mosaic virus

<400> 48						
Met Ala Leu Pro Asn Gln Gln Thr Val Asp Tyr Pro Ser Phe Lys Leu						
1	5	10	15			
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20	25	30				
His Leu Thr Gly Glu Phe Glu Lys Lys Tyr Glu Pro Thr Ile Gly Val						
35	40	45				
Glu Val His Pro Leu Asp Phe Phe Thr Asn Cys Gly Lys Ile Arg Phe						
50	55	60				
Tyr Cys Trp Asp Thr Ala Gly Gln Glu Lys Phe Gly Gly Leu Arg Asp						
65	70	75	80			
Gly Tyr Tyr Ile His Gly Gln Cys Ala Ile Ile Met Phe Asp Val Thr						
85	90	95				
Ala Arg Leu Thr Tyr Lys Asn Val Pro Thr Trp His Arg Asp Leu Cys						
100	105	110				
Arg Val Cys Glu Asn Ile Pro Ile Val Leu Cys Gly Asn Lys Val Asp						
115	120	125				
Val Lys Asn Arg Gln Val Lys Ala Lys						
130	135					

<210> 49
 <211> 135
 <212> PFT
 <213> Tobacco Mosaic Virus

<400> 49						
Met Ala Leu Pro Asn Gln Gln Thr Val Asp Tyr Pro Ser Phe Lys Leu						
1	5	10	15			

Val Ile Val Gly Asp Gly Gly Thr Gly Lys Thr Thr Phe Val Lys Arg
 20 25 30
 His Leu Thr Gly Glu Phe Glu Lys Lys Tyr Glu Pro Thr Ile Gly Val
 35 40 45
 Glu Val His Pro Leu Asp Phe Phe Thr Asn Cys Gly Lys Ile Arg Phe
 50 55 60
 Tyr Cys Trp Asp Thr Ala Gly Gln Glu Lys Phe Gly Gly Leu Arg Asp
 65 70 75 80
 Gly Tyr Tyr Ile His Gly Gln Cys Ala Ile Ile Met Phe Asp Val Thr
 85 90 95
 Ser Thr Thr Asp Ile Gln Glu Cys Ser Asn Met Ala Pro Ser Leu Gln
 100 105 110
 Gly Leu Lys His Ser Gln Leu Phe Phe Val Gly Ile Lys Leu Met Lys
 115 120 125
 Asn Arg Gln Val Lys Ala Gln
 130 135

<210> 50
 <211> 277
 <212> DNA
 <213> Tobacco mosaic virus

<220>
 <221> CDS
 <222> (1)....(277)

<400> 50
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 1 5 10 15
 aac gga ctt aag tcc tcc gct cct tcc cag cca ccc gca agg cta aca 96
 Asn Gly Leu Lys Ser Ser Ala Pro Ser Gln Pro Pro Ala Arg Leu Thr
 20 25 30
 acg aca tta ctt cca tca caa gca acg gcg gaa gag tta act gca tgc 144
 Thr Thr Leu Leu Pro Ser Gln Ala Thr Ala Glu Glu Leu Thr Ala Cys
 35 40 45
 agg tgg ggc ctc cga ttg gaa aga aga agt ttg aga ctc tct ctt acc 192
 Arg Cys Gly Leu Arg Leu Glu Arg Arg Ser Leu Arg Leu Ser Leu Thr
 50 55 60
 ttc ttg acc tta ccg att ccg aat tgg cta agg aag ttg act acc tta 240
 Phe Leu Thr Leu Pro Ile Pro Asn Trp Leu Arg Lys Leu Thr Thr Leu
 65 70 75 80
 tcc gca aca agt gga ttc stt gtg ttg aat tcg aag t 277
 Ser Ala Thr Ser Gly Phe Leu Val Leu Asn Ser Lys
 85 90

<210> 51
 <211> 90
 <212> PRT
 <213> Tobacco mosaic virus

<400> 51
 Ala Thr Met Val Ala Ser Pro Ala Gln Ala Thr Met Val Ala Pro Phe
 1 5 10 15
 Asn Glu Leu Lys Ser Ser Ala Pro Ser Gln Pro Pro Ala Arg Leu Thr
 20 25 30
 Thr Thr Leu Leu Pro Ser Gln Ala Thr Ala Glu Glu Leu Thr Ala Cys
 35 40 45
 Arg Cys Gly Leu Arg Leu Glu Arg Arg Ser Leu Arg Leu Ser Leu Thr
 50 55 60
 Phe Leu Thr Leu Pro Ile Pro Asn Trp Leu Arg Lys Leu Thr Thr Leu
 65 70 75 80
 Ser Ala Thr Ser Gly Phe Leu Val Leu Asn Ser Lys
 85 90

<210> 51
 <211> 167
 <212> DNA
 <213> Arabidopsis thaliana

<400> 52
 acttgatctg ttccatacta aaacccaaac tcatgttgt tcactccaaa cacaacacaca 60
 gcaggtaatccaaaatcgctctataacaaaaa ggaaatgcaa caaaaacagaa gaaacaacta 120
 agtagtaggc aagattcttcttcactcgctc ttcttggcta cggagcc 167

<210> 53
 <211> 393
 <212> DNA
 <213> Arabidopsis thaliana

<400> 53
 gaaaacgacgt cggctagtttta ttgggcatgg cctgaccaggc agcaacaaca tcacaatcat 60
 catcaggatca attgatcata ttgtcttaaga acaacatcat actcatcttg atatcattat 120
 ttatcatcaaa aaaaatccatcgtagatttttttataataagt attttcaaat tatttggcac 180
 gtttaaaattt aattaaatttggtttattatgtttacttgat ctgtttata ctaaaaccaa 240
 aaggaaaaacc aaaactcatgtttgttact cccaaacacaa acacaggagt aatcaaaaaat 300
 ctgtttataaa caaaaaggaa atgcaacaaa acagaagaaa caactaagta gtaggcaaga 360
 ttcttcttca ctgtttcttcttggctacggc gcc 393

<210> 54
 <211> 24
 <212> PPT
 <213> Arabidopsis thaliana

<400> 54
 Glu Thr Thr Ser Ala Ser Tyr Trp Ala Trp Pro Asp Gln Gln Gln 60
 1 5 10 15
 His His Asn His His Gln Phe Asn
 20

<210> 55
 <211> 418
 <212> DNA
 <213> Homo sapiens

<400> 55
 gaaggcggttc ggtggcatcag tgatgaagtg cgggaagggc aaagtttggc tcgatccccaa 60
 cggaaagctcc gacatctcca tggccatattcc cccggccaaaac atcaggaagc ttgtgaagga 120

tggtttccatc atcaggaagc caaccaagat tcactcttgt tccagagctc gcaaaatgaa	180
gattggccaaag atgaagggtc gtcactctgg atacggtaag aggaagggtt cccgtgaagc	240
taggttggccaa acaaaggtaa tggatggatgg taggatgttgt gtttttaggc gtctttgaa	300
gaaatacaga gagacgaaga agattgacaa gcacatgtac catgacatgt acatgcgtgt	360
taagggttaat gtgttcaaga acaagggtgt cttgatggag agtataccaca agtcaaaggc	420
ttagaagctt ggggagaa	438

«210» 56
 «211» 438
 «212» DNA
 «213» Homo sapiens

«400» 56	
gaagagggtc gcttttagtg ttttttgtg tggcaagaag aaggttgtgt tagaccccaa	60
ttagaccaat gaaatgcgc aatgcacactc ccgtcagcag atccggaaagc tcatcaaaga	120
tgggttgtatc atccggcaaggc ctgtgacggg ccattccgg gtcgtatggc gggaaaaacac	180
cttggccggc cggaaagggtt ggcacatggg cataggttaag cggaaagggtt cggccaatgc	240
ccgaatgcgc gagaaggtaa catggatgg gagaatgagg attttgcgc ggttgttcag	300
aagataccgt gaatctaaga agatcgatcg ccacatgtat cacagctgtt acctgaagg	360
gaagggtttaat gtgttcaaaa acaagggtgt ttcgtatggaa cacatccaca agtcaaggc	420
agacaaaggcc cggaaagaa	438

«210» 57
 «211» 438
 «212» DNA
 «213» Homo sapiens

«400» 57	
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cgaaaaggcc gacatcttcc tggccaaattc ccgcacaaac atccggaaagc ttgttgaagga	120
tggtttccatc atccggaaagc caaccaagat tcactcttgt tccagagctc gcaaaatgaa	180
gattggccaa atgaagggtc gtcactctgg atacggtaag aggaagggtt cccgtgaagc	240
taggttggccaa acaaaggtaa tggatggatgg taggatgttgt gtttttaggc gtctttgaa	300
gaaatacaga gagacgaaga agattgacaa gcacatgtac catgacatgt acatgcgtgt	360
taagggttaat gtgttcaaga acaagggtgt cttgatggag agtataccaca agtcaaaggc	420
ttagaagctt ggggagaa	438

«210» 58
 «211» 438
 «212» DNA
 «213» Homo sapiens

«400» 58	
gaagggtgtc gcttttagtg ttttttgtg tggcaagaag aaggttgtgt tagaccccaa	60
ttagaccaat gaaatgcgc aatgcacactc ccgtcagcag atccggaaagc tcatcaaaga	120
tgggttgtatc atccggcaaggc ctgtgacggg ccattccgg gtcgtatggc gggaaaaacac	180
cttggccggc cggaaagggtt ggcacatggg cataggttaag cggaaagggtt cggccaatgc	240
ccgaatgcgc gagaaggtaa catggatgg gagaatgagg attttgcgc ggttgttcag	300
aagataccgt gaatctaaga agatcgatcg ccacatgtat cacagctgtt acctgaagg	360
gaagggtttaat gtgttcaaaa acaagggtgt ttcgtatggaa cacatccaca agtcaaggc	420
agacaaaggcc cggaaagaa	438

«210» 59
 «211» 145
 «212» PRT
 «213» Tobacco mosaic virus

<400> 59

Lys Arg Leu Ala Ala Ser Val Met Lys Cys Gly Lys Gly Lys Val Trp
1 5 10 15
Leu Asp Pro Asn Glu Ser Ser Asp Ile Ser Met Ala Asn Ser Arg Gln
20 25 30
Asn Ile Arg Lys Leu Val Lys Asp Gly Phe Ile Ile Arg Lys Pro Thr
35 40 45
Lys Ile His Ser Arg Ser Arg Ala Arg Lys Met Lys Ile Ala Lys Met
50 55 60
Lys Gly Arg His Ser Gly Tyr Gly Lys Arg Lys Gly Thr Arg Glu Ala
65 70 75 80
Arg Leu Pro Thr Lys Val Leu Trp Met Arg Arg Met Arg Val Leu Arg
85 90 95
Arg Leu Leu Lys Lys Tyr Arg Glu Thr Lys Lys Ile Asp Lys His Met
100 105 110
Tyr His Asp Met Tyr Met Arg Val Lys Gly Asn Val Phe Lys Asn Lys
115 120 125
Arg Val Leu Met Glu Ser Ile His Lys Ser Lys Ala Lys Leu Gly Glu
130 135 140
Lys
145

<210> 60

<211> 147

<212> PRT

<213> Homo sapiens

<400> 60

Lys Arg Leu Ala Ser Ser Val Leu Arg Cys Gly Lys Lys Lys Val Trp
1 5 10 15
Leu Asp Pro Asn Glu Thr Asn Glu Ile Ala Ala Asn Ala Asn Ser Arg
20 25 30
Gln Gln Ile Arg Lys Leu Ile Lys Asp Gly Leu Ile Ile Arg Lys Pro
35 40 45
Val Thr Val His Ser Arg Ala Arg Cys Arg Lys Asn Thr Leu Ala Arg
50 55 60
Arg Lys Gly Arg His Met Gly Ile Gly Lys Arg Lys Gly Thr Ala Asn
65 70 75 80
Ala Arg Met Pro Glu Lys Val Thr Trp Met Arg Arg Met Arg Ile Leu
85 90 95
Arg Arg Leu Leu Arg Arg Tyr Arg Glu Ser Lys Lys Ile Asp Arg His
100 105 110
Met Tyr His Ser Leu Tyr Leu Lys Val Lys Gly Asn Val Phe Lys Asn
115 120 125
Lys Arg Ile Leu Met Glu His Ile His Lys Leu Lys Ala Asp Lys Ala
130 135 140
Arg Lys Lys
145